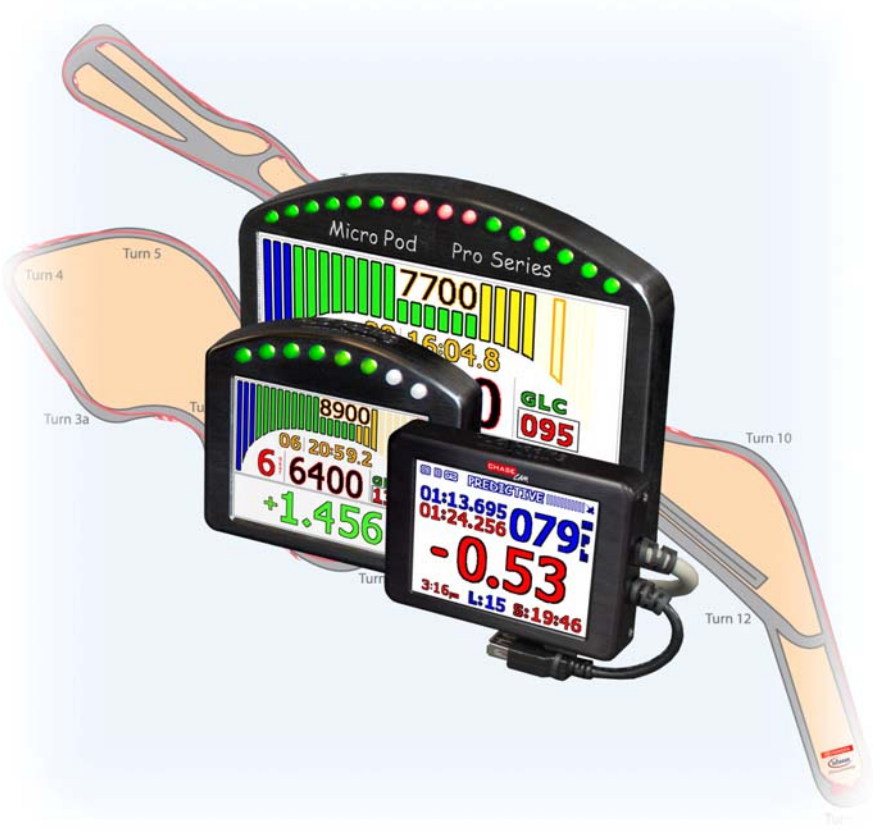
RLC ENTERPRISES, RACING DIVISION

Chase Commander User Manual



This manual should be used for quick reference and on track use for the Chase Commander.

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Chase Commander Quick Start Guide

First and foremost thank you for purchasing a RLC Racing Chase Commander. Please use this Quick Start Guide to help you install and setup your unit. This Quick Start Guide refers often to the Chase Commander Getting Started Manual for more detailed procedures so please keep it on hand. This guide was written assuming the unit will be in road racing and predictive mode.

1 Unpack the Unit

Inside your box from RLC Racing will be your order, please check this with your invoice to make sure that you have everything you ordered and need.

2 Mount Unit In Car

Attach window suction cup mount to windshield then snap in the Chase Commander. When mounting make sure that the Chase Commander is as straight as possible so the internal 3-axis G-Force sensor reads correctly. Connect the cable harness to the unit then connect the GPS to the correct connector (marked GPS).

See Getting Started Manual For More Details

3 Mount the GPS Antenna

Place the GPS antenna on the outside of the car (not mounted under a panel, etc.), in clear view of the sky, away from the engine compartment or any type of electrical components, on the center line of the car (preferred), and as horizontal to the sky as possible to get the best GPS results.

See Getting Started Manual For More Details

4 Connect Power to the Unit

Connect the cigarette lighter adapter included with your Chase Commander into the harness. Or if you purchased the direct connect power adapter, wire directly to the battery or the master cut off switch.

Do not connect to power behind the dash or ignition as it is not a clean source of power. Only connect to power using the power adapter included with your unit. If you do not use the power adapter from RLC or hook up power incorrectly (backwards), then the warranty will be voided, check terms and conditions for details.

See Getting Started Manual For More Details

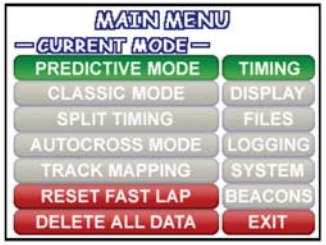
5 Start Your Car

Start your engine and verify that the Chase Commander starts up immediately (turn power off immediately if dash does not power up instantly).

See Getting Started Manual For More Details

6 Select Mode

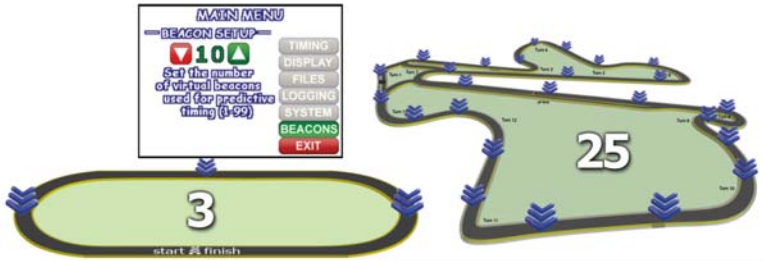
To select the timing mode, touch the screen (anywhere) then touch the Main Menu button that pops up on the bottom of the screen. Select the timing mode you want from the timing screen.



See Getting Started Manual For More Details

7 Set Number of Predictive Beacons

Assuming you have selected predictive mode, touch the Beacons button to set the number of beacons for predictive lap timing.



See Getting Started Manual For More Details

8 Set Logging Preferences

From the Main Menu screen touch the Logging button to set all logging preferences.

See Getting Started Manual For More Details

9 Setting a Start/Finish Line or Split Markers

Set a start/finish line (or split marker) by touching the button on the screen, while out on the track, and traveling at least 25 mph. Then drive one complete lap. Unit is now ready for the weekend.

See Getting Started Manual For More Details

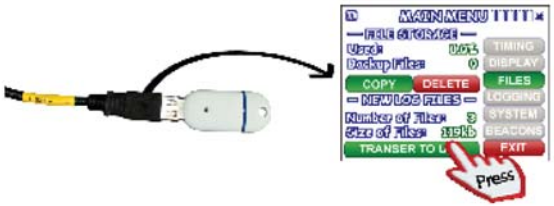
10 Turn Off Car

Before you remove power to the unit, it must be allowed it to stop logging first! The 'L' in the upper left hand corner of the screen will turn off when the unit has stopped logging. If you do not let your unit stop logging before power is removed, you may lose lap information. You can manually stop logging or allow the unit to stop logging after a set amount of time (step 8).

See Getting Started Manual For More Details

11 Offload Data

To offload your session files simply plug the USB stick into the USB port marked USB memory stick. The unit will recognize the stick and prompt you to offload your session files.



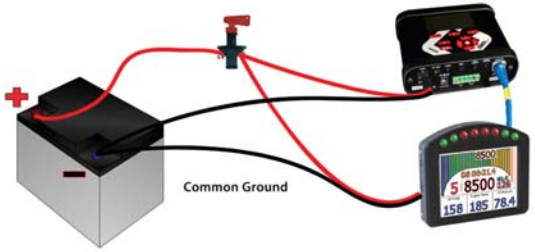
See Getting Started Manual For More Details

Synchronized Video Quick Start Guide

Please use this Quick Start Guide to help you get sychronized video working with your RLC race dash or Chase Commander and ChaseCam PDR camera.

1 Connect Power

The ChaseCam camera needs to have it's own source of power, preferrably not batteries, and needs to share the same ground as the RLC unit. We recommend you power directly to the battery or to the master cut off switch (also connected directly to the battery).



2 Firmware on ChaseCam PDR Camera

Check the ChaseCam PDR camera to see if it has version 01.02.12 or newer. If you just purchased your ChaseCam PDR camera from RLC Racing or directly from ChaseCam it will have the latest version of firmware. To check the version number, look at the screen while the camera is booting.

If your unit requires updating, visit www.chasecam.com/pdr-update.

3 Settings on the ChaseCam PDR Camera

If your ChaseCam PDR camera has up-to-date firmware there is a pre-defined set up option that allows the PDR to work exclusively with RLC units.

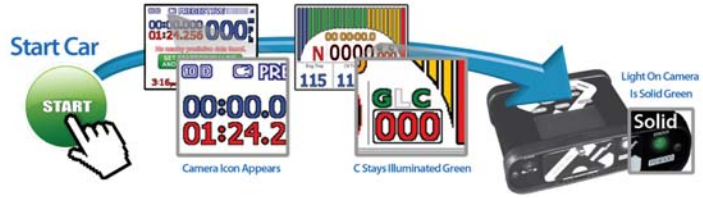
To load this pre-defined option press the Menu button on the ChaseCam PDR camera, select the Shortcuts option, select the Data Acquisition option, then select Data Acq 5 - Chase RLC. There are no settings on the RLC unit that need to be set.

4 Connect Camera to RLC Unit

Connect the cable marked Video on the harness of your RLC unit into the back of the ChaseCam PDR camera. The car should be turned off when connecting cables.

5 Start Your Car

Start your engine and verify that the RLC unit starts up and connects to the ChaseCam PDR camera. You can verify connection by looking at the screen of your RLC unit. Chase Commander units will have a camera icon appear in the top left hand corner of the screen and the Micro Pod or Pro units will have a green C illuminate on the screen. Look at the ChaseCam PDR camera and verify that the light on the front is green to indicate power.



6 Verify ChaseCam Recording

The ChaseCam PDR camera will start recording as soon as the RLC unit starts logging data. There are indicators on both the Chase Commander (L in upper left hand corner) and the Micro Pod/Pro units (L indicator in GLC field illuminates green) to let you know when the RLC unit is logging. Look at the ChaseCam PDR camera and verify that the light on the front is now blinking red to indicate recording.

7 Turn Off Car

Before you remove power to the RLC unit, it must be allowed it to stop logging first! The 'L' in the upper left hand corner of the screen (Chase Commander) or right above the MPH (Micro Pod or Pro unit) will turn off when the unit has stopped logging. If you do not let your unit stop logging before power is removed, you will corrupt your synchronized video file. Verify your RLC unit's setup to know how your unit stops logging; either by waiting a set amount of time or when the engine is turned off.

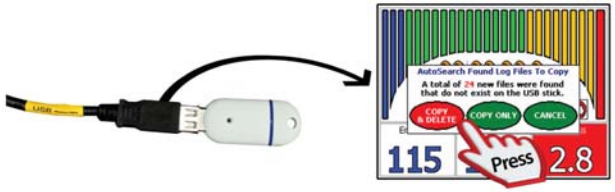
8 Offload Synchronized Video File

To offload your synchronized video files simply pull the compact flash card out of the ChaseCam PDR camera. The .mpg files on the compact flash card not only contain the video file but all the data as well. To analyze your sychronized video file open the .mpg file in the RLC Race Analysis software.

9 Corrupt Synchronized Video File?

If you find that your camera accidentally turns off while you were out on the track or you remove power too soon, your synchronized video file will be corrupted. You cannot open it in the RLC Race Analysis Software but you can still view it as a standard video.

The log file on the RLC unit can always be used for data analysis even if the synchronized video file is corrupted. The data (.bin) log file on the RLC unit only contains the data, not the video. Use the USB memory stick included with the RLC unit to offload the log file.



Exact Track Map Quick Start Guide

Please use this Quick Start Guide to help you create an Exact Track Map. A more detailed explanation on Exact Track Mapping can be found in the User and Drivers Manual (Ch 4).

1 Verify Differential Satellite Connection

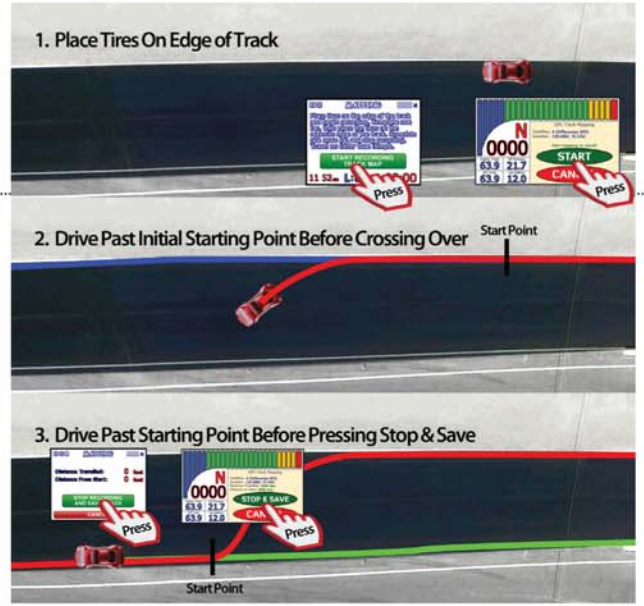
The RLC unit needs to be connected to a differential satellite before mapping a track. The GPS sensor screen will indicate a differential connection on the Micro Pod or Pro unit and a D will appear in the upper left hand corner of the Chase Commander screen to show it is connected to a differential satellite.

2 Enter Track Mapping Mode

While in the hot pits navigate to the track mapping screen. On the Chase Commander tap the screen, touch the Main Menu button, touch the Track Mapping button, then press the Exit button. On the Micro Pod or Pro unit, tap the screen unitl you get to the sensor screen, tap in the sensor screen unitl the GPS Track Mapping Screen appears, then press and hold the Enter button.

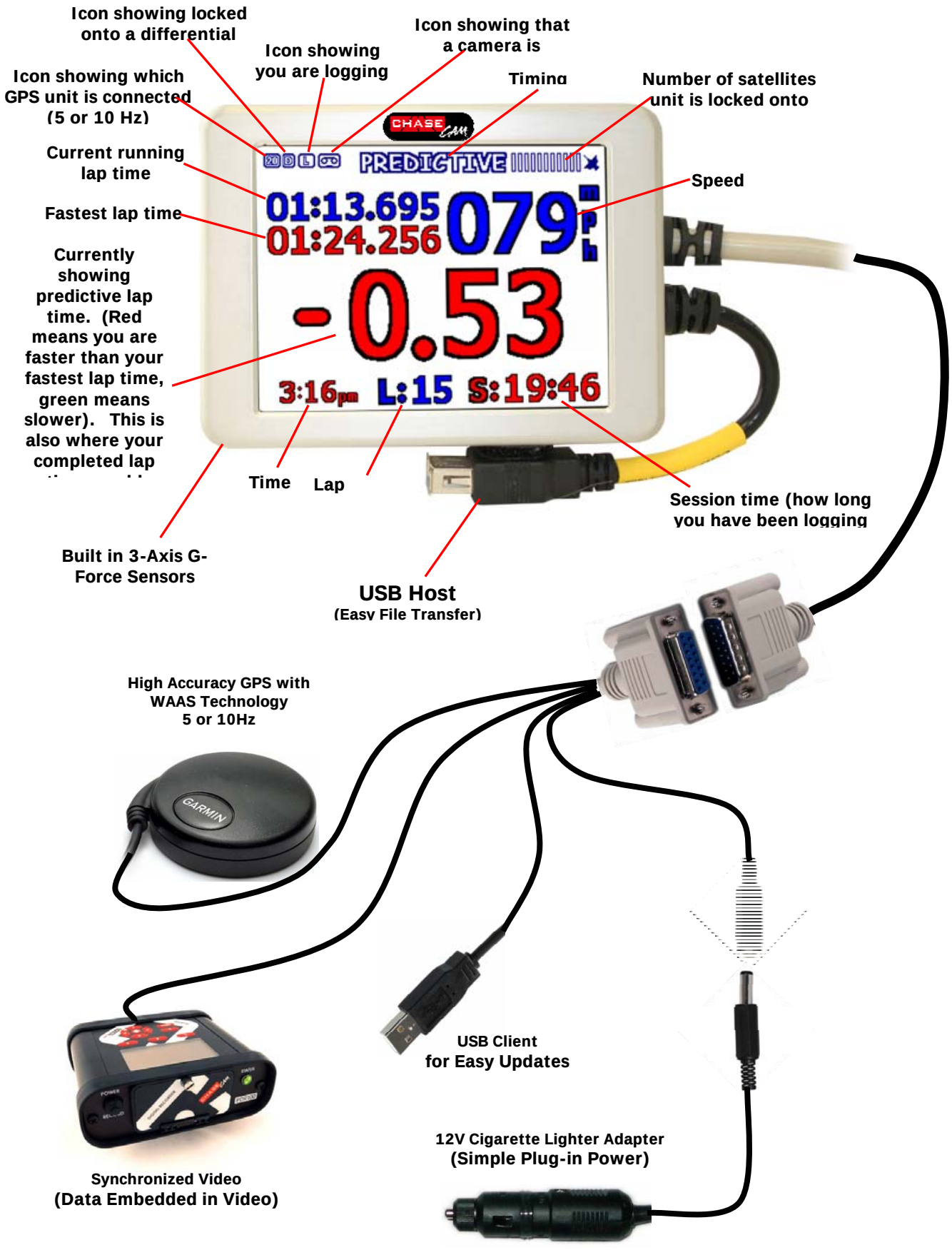
3 Start Mapping the Track

With your tires positioned on the edge of the track (either the inside or outside), driving slowly (about 20 mph), press the Start button and drive around the track. Drive past your initial start point then immidiately drive over to the other side of the track and place your tire on the opposite edge and drive around. After your drive past the initial point on the second side press the Stop and Save button.



4 Send Your Log File to RLC Racing

Once you have created an Exact Track Map file (.bin) you need to send it to RLC so we can make the Exact Track Map. Send track maps and links to the track website to info@rlcracing.com. We will send the Exact Track map to you and we will also post it online for others to use.


Icon showing locked onto a differential
Icon showing you are logging
Icon showing that a camera is
Timing
Number of satellites unit is locked onto
Icon showing which GPS unit is connected (5 or 10 Hz)
Current running lap time
Fastest lap time
Speed
Currently showing predictive lap time. (Red means you are faster than your fastest lap time, green means slower). This is also where your completed lap
CHASE cam
PREDICTIVE
01:13.695
01:24.256
079
mph
-0.53
3:16pm
L:15
S:19:46
Time
Lap
Session time (how long you have been logging
Built in 3-Axis G-Force Sensors
USB Host
(Easy File Transfer)
High Accuracy GPS with WAAS Technology 5 or 10Hz
GARMIN
USB Client
for Easy Updates
12V Cigarette Lighter Adapter
(Simple Plug-in Power)
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(Data Embedded in Video)

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Introduction

First and foremost, thank you for buying our products. You are a valued customer and R.L.C. looks forward to a mutually beneficial relationship with you. In order to help insure your success, we have prepared this getting started guide for you. Use this step-by-step Getting Started Guide/User Manual to get started for the first time and as a reference during the normal operation of your Chase Commander. The Chase Commanders have a touch screen for navigation. Simply tap on the screen to make your selection or to get to another screen. We will cover how to get around the unit using only the touch screen in the section below.

Installation

Attach the Chase Commander unit to the suction cup mount by snapping it in, RLC Racing logo should be on the top. Now with the unit attached to the suction cup mount, mount the unit to the windshield in a desirable place. You will want to mount it close enough so you can touch the screen easily when your seat belts are tight, you will need to do this when you set a start/finish line. Connect the GPS unit to the serial port marked GPS on the harness. You will want to mount the antenna for the GPS unit on the outside of the car so it is in clear view of the sky. The antenna is magnetized so it is easy to mount almost anywhere. For customers using the 10 Hz GPS unit, we have included a piece of Velcro so you can securely mount your GPS unit anywhere in your car. The 5 Hz GPS is an all-in-one unit and is magnetized so that it mounts to the outside of the car easily, no Velcro is required. We recommend that you place the GPS antenna somewhere on the center line of your car (away from the engine compartment) in clear view of the sky.

Booting Up

To power the Chase Commander, plug it into the cigarette lighter. The GPS is powered through the harness of the Chase Commander. Depending on your car you may need to turn the car on. Once you have powered the unit, you should see a startup screen (Fig 1). This screen will display while the system is loading for a few seconds and then you will see the driving screen (Fig 2). The driving screen is the screen which you will use during races. The GPS will take about a minute to connect and the screen will change to Figure 3. This screen will be referred to as the Driving screen. You will set the start/finish later.

Figure 1 – Startup Screen

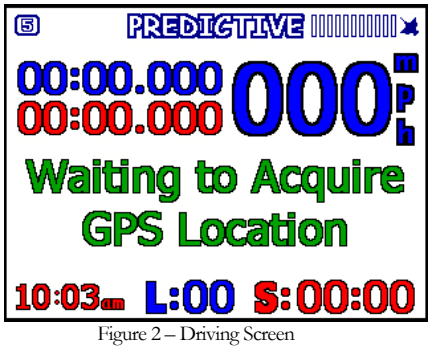

Figure 2 – Driving Screen

Figure 3 – Driving Screen Ready

Getting Around

Navigating through the different screens of the Chase Commander is easy; simply use the touch screen. To navigate to the different screens, touch the screen and buttons will pop up from the bottom and top of the screen. To select user preferences touch the Main Menu button, to review a summary of your last session touch the Summary button, to change to performance mode touch the Performance button, and to change to drifting mode touch the Drifting button (must have Dual GPS for this option) (Fig 4).

Figure 4 – Navigation Buttons

Indicator Field

The indicator field is a useful tool for drivers to know whether you are connected to satellites, logging, or if a camera is attached. There will be a '5' or a '10' in the indicator field to indicate which GPS unit you have connected to your unit. In the upper right hand corner there is a GPS satellite bar that lets you know how many satellites you are connected to and it will blink on and off when it is connecting to satellites. The 'L' stands for logging and it will turn on when the Chase Commander has started logging data and will turn off when it stops logging. The camera icon will turn of if a ChaseCam camera system connected to the Chase Commander. The 'D' stands for differential satellite mode.

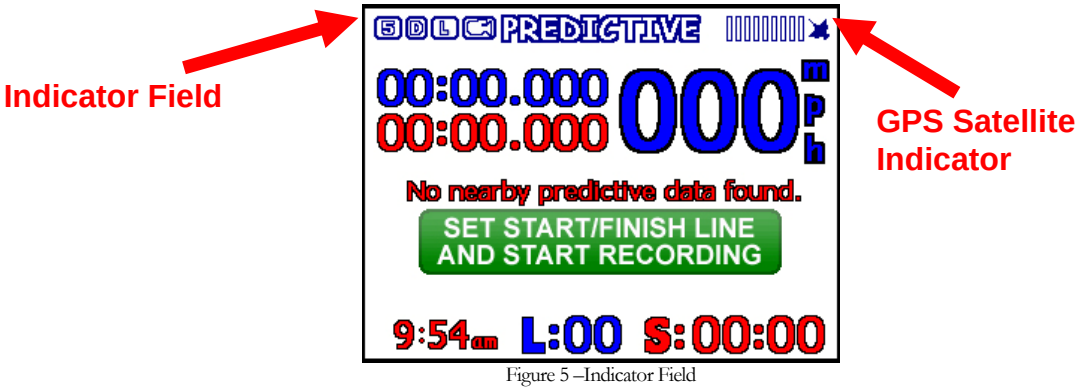

Figure 5 –Indicator Field

Lap, Predictive, and Split Times

Lap times are displayed during the race and require no user intervention. Please see the GPS chapter on how to set up the lap timers. Lap times, predictive and split times are flashed on screen and remain on screen for a set amount of time (Fig 6, 7, and 8). Below the lap time is a value that tells you if you were faster or slower than your fastest lap time. The predictive lap time displays the time difference between your fastest lap time and your current lap time at that particular spot on the track. The split lap time displays your time between the markers you set on the track and the time difference between your best time and your current time.

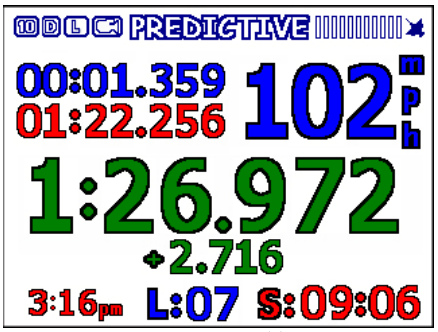

Figure 6 – Lap Timer

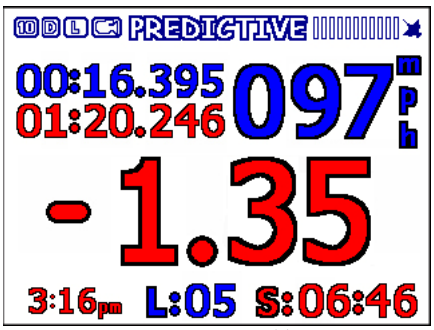

Figure 7 – Predictive Lap Timer

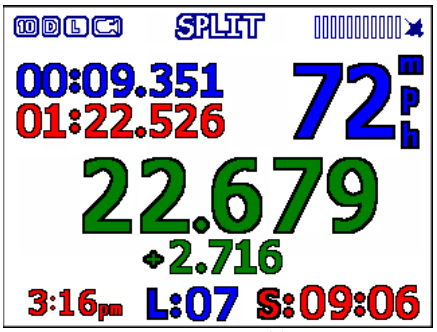

Figure 8 – Split Lap Timer

Session Timer / Lap Counter

The session time and lap counter are displayed on the bottom of the driving screen (Fig 9). The lap counter keeps track of number of completed laps you have made; it will increase every time you cross the start/finish line and complete a lap. Please see the setting the start/finish line section below on how to set the start/finish line. The session time is denoted by the 'S' and displays how long you have been on the track and you can figure out how long until the end of a timed race. The session time automatically starts when you reach logging speed.

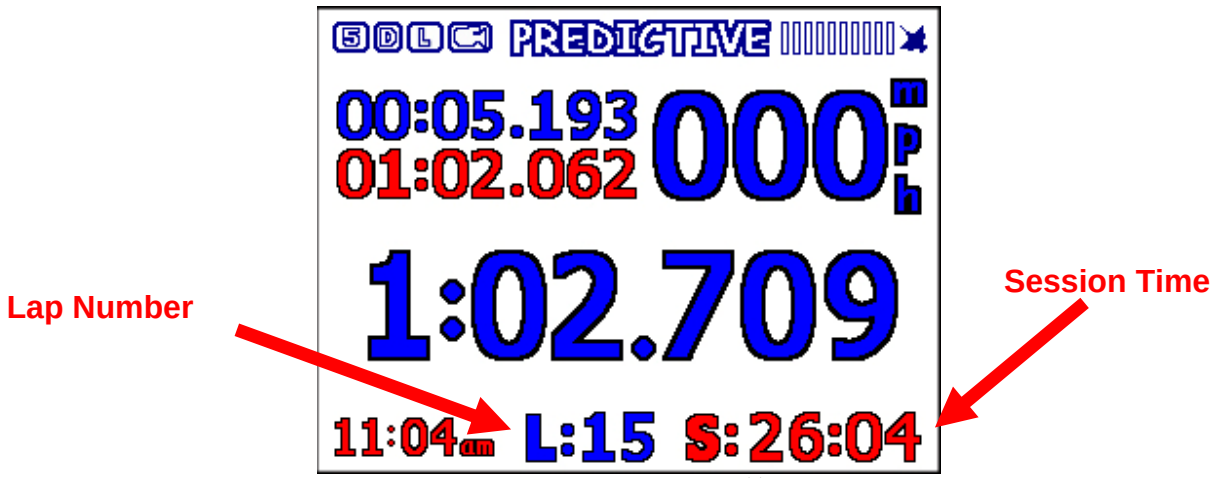

Figure 9 – Lap Counter and Session Time

User Preferences

To set user preferences you need to be in the Main Menu screen. To set your preferences, touch the screen anywhere but on the Set Start/Finish button. Two buttons will appear at the bottom right of the screen. If you accidentally hit the Set Start/Finish, don't worry you can reset it in the Main Menu screen. Press the Main Menu button and the Main Menu screen will appear. From here you will set your preferences.

Timing Screen

The Chase Commander has 5 different timing modes that you can choose from; it ships from the factory in predictive mode. Touch on the Timing button on the right to set the timing mode on the left (Fig 10).

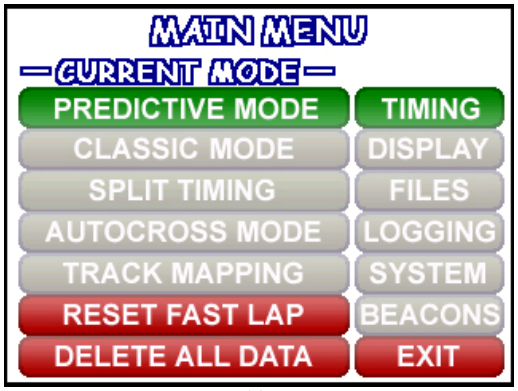

Figure 10 – Timing Screen

The Timing screen allows you to select which timing mode you want the Chase Commander unit to be in. Predictive Timing puts the unit in predictive mode; you will need to set at start/finish and drive a complete lap around the track before you will receive predictive lap times. Classic Lap Timing mode will only give you your lap times as you cross the start/finish line. Autocross mode allows you to set a finish line, while the start line is based off G-Forces. Split Timing lets you set a different start/finish so that you can section up the track and only work on that particular section of track. Predictive timing does not work while the unit is in autocross mode. Track Mapping mode is explained later in this manual. This is also where you can reset your fastest lap and the start/finish line. The fastest lap is used in both the predictive and classic lap timing mode. This is the lap that all times are compared to and is displayed in the Driving screen. If you reset the fast lap you will have to drive a complete lap around the track before the predictive timing will work, you do not have to reset a start/finish line. The Delete All Data button will delete the start/finish line and the fast lap. You will have to reset a start/finish line and drive a complete lap before predictive lap timing will work. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

Display Screen

The Display screen (Fig 11) allows you to set up the screen the way you want. You can select the screen color, brightness or calibrate the screen.

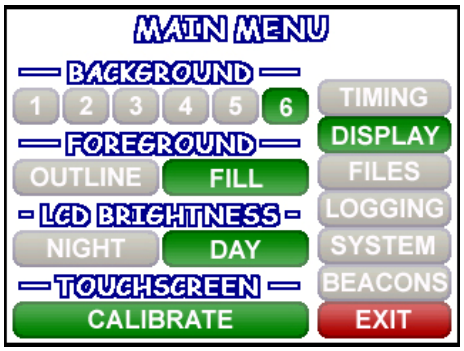

Figure 11 – Display Screen

There are six different backgrounds to choose from, three plain colors and three graphical backgrounds. The Foreground option allows you to either fill or outline the numbers on the screen. Choose whichever one allows you to see the numbers the best. LCD Brightness allows you to choose between day and night mode. Day mode is brighter than

night mode. The Touchscreen option allows you to calibrate the touchscreen. The touchscreen is already calibrated in the factory but you can choose to redo it if you don't feel the screen is responding well to your touch. If you calibrate the touchscreen you need to power the unit off and on before the changes will take effect. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

Files Screen

The Files screen (Fig 12) is where you can see how many logged session files or backup files you have on your unit.

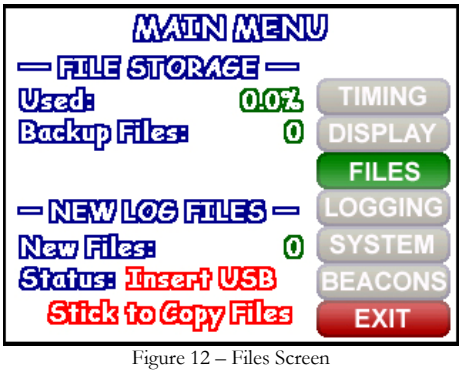

Figure 12 – Files Screen

File Storage shows you how much of the memory you have used and how many minutes you have left to log. The Log Files shows you how many files you have logged, the size of the files, and whether or not you have a USB memory stick plugged into the unit to download files. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

Logging Screen

The Logging screen (Fig 13) is where you set your logging preferences. This is where you will set up how you want your Chase Commander to start and stop logging.

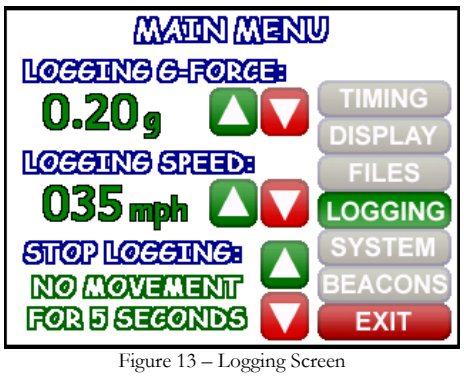

Figure 13 – Logging Screen

Logging Speed is the speed which you want to reach before your unit starts to log data. You don't want to set it too low so you won't start logging while you are driving around the pits. We recommend 35 mph. Stop Logging is where you set how long after the car has stopped that you want to stop logging. The Logging screen is also where you set the Logging G-Force limit. This setting is used in both the Performance Mode and Autocross Mode. You want to set it low enough so that your car will start logging when it accelerates but not so low that it starts logging when your car barely moves forward. We recommend starting at 0.2 g. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

System Screen

The System screen (Fig 14) allows you to set the time and date so the logged files will have the correct times. This screen also lets you "zero out" your internal 3-axis G-Force sensor.

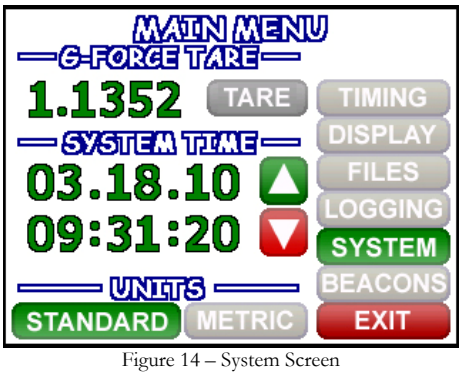

Figure 14 – System Screen

Once you mount the Chase Commander in your car as level as you can, press the tare button to "zero out" the G-Forces. You can select between standard or metric units. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

Beacons Screen

The Beacon screen (Fig 15) allows you to set the number of beacons for Predictive lap timing mode.

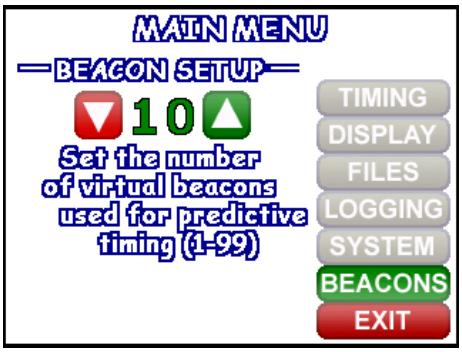

Figure 15 – Beacons Screen

You can set up to 99 beacons. For a 1 mile track we would recommend 10 beacons, for a 2 mile track we would recommend 15 beacons, for a 3 mile track we would recommend 20 beacons, etc. These should be considered starting points, please adjust the number of beacons to you your liking. Press either the Exit button if you are done setting your preferences or select another option in the Main Menu screen. When the Exit button is pressed, your preferences are saved and you are taken back to the Driving screen.

GPS

GPS is included with all Chase Commanders, and allow you to get exact track maps, lap times, predictive times, and split times. Standard GPS units included with your Chase Commander are the 5 Hz, although a 10 Hz model is also available from R.L.C. We recommend that you place the GPS antenna somewhere on the center line of your car (away from the engine compartment or any type of electrical noise), in clear view of the sky, and horizontal or parallel to the sky.

When connecting the GPS for the first time it could take upwards of an hour to lock onto satellites and start transmitting data, due to a significant change of position. When making a connection for the first time make sure the antenna is in clear view of the sky and the cord is completely uncoiled. After the GPS has established a connection for the first time, connecting to satellites can take as little as 5 seconds to a maximum of 1 minute.

The top right of the screen will flash until a GPS connection has been made. To view how many satellites your GPS unit is connected to, look at the satellite bar on the top right of the screen. When the GPS initially connects, it will only be connected to maybe 4 satellites. As the GPS units stays on it will connect to more satellites automatically. When a differential signal has been locked onto a 'D' with a box around it will appear in the upper left hand corner. Also indicated in the upper left hand corner of the screen will be the GPS (5 or 10 Hz), a 'L' will appear when you are logging data, and if you have a Chase CAM camera connected a camera icon will appear.

If you would like to verify that the GPS is working and connected properly, you can simply look at the top right hand corner of the screen at the GPS satellite indicator (Fig 16). The GPS satellite indicator has bars, each bar represents a satellite the Chase Commander is connected to.

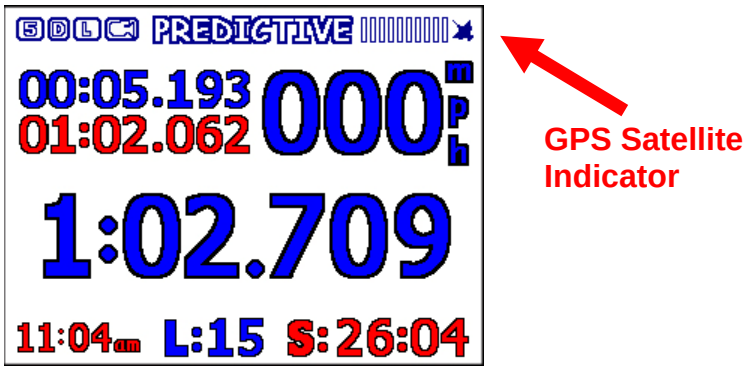

Figure 16 – GPS Verification

Setting the Start/Finish Line

A start/finish line must be set on your unit so the pop up lap timer, lap counter, and predictive lap timer works properly. You must be moving forward and on the track (not in the hot pits) when you set the start/finish. Usually you set the start/finish line on your first lap around the track. Once the start/finish line has been set, your unit will remember it until you drive a different track and/or set a different start/finish line. This start/finish lap will also be recorded as your base lap for when the unit is in predictive mode. To read more about predictive lap timing, see the GPS predictive lap timer section below.

To set the start/finish line you need to press the big, green Set Start/Finish button on the driving screen (Fig 3). When your car passes the spot on the track that you want to mark as the start/finish line press the Set Start/Finish button. Make sure you drive a complete lap around the track so that your base lap for predictive lap timing will be established.

Creating a GPS Track Map

GPS is the most accurate & precise way to map a track. Every lap that you take around the track is distinctive and unique. Unlike mapping a track with G-Force, just a single lap will render an accurate map based on your exact line you drove. G-Force requires that you make multiple laps and then the PC software will average your laps and create a track map based on those averages. Each lap will look exactly the same and the data can be off as much as 30 ft! With RLC, each lap will look different because each line you drive around the track is slightly different. The data that is recorded from each lap is accurate to within inches. R.L.C. does not average and compress your data to create a track map; instead our software creates a track map based on each individual lap. The Race Analyzer software creates a track map based on how much of the track you drove on (Fig 17). The left side of the track will be the leftmost line your car drove on the track and the right side will be the rightmost line your car drove. The narrower the track means that you drove close to the same line every time you drove that part of the track. Now when you analyze your data on the Race Analyzer software, each lap will appear within the track that was created by your car. The track map that was created is specific to the data for that particular session. Each session will render a different track map because your drive differently every time.

Figure 17 – Track Map

Exact Track Mapping

R.L.C. offers Exact Track mapping which is the most precise way to map a track. Exact Track allows you to see your lines within the width of the actual track. We do this by driving the right and left sides of the track so that you are able to get the exact widths everywhere along the track (Fig 18). When you load your log files in our Race Analyzer software, your laps are shown within the width of the track. You can see the exact lines you drove everywhere on the track and you are able to find the fastest line. You only have to create a track once and you

have the track forever. You can even check at R.L.C.'s website to see if the Exact Track map has already been made and download it.

Figure 18 – Exact Track Map

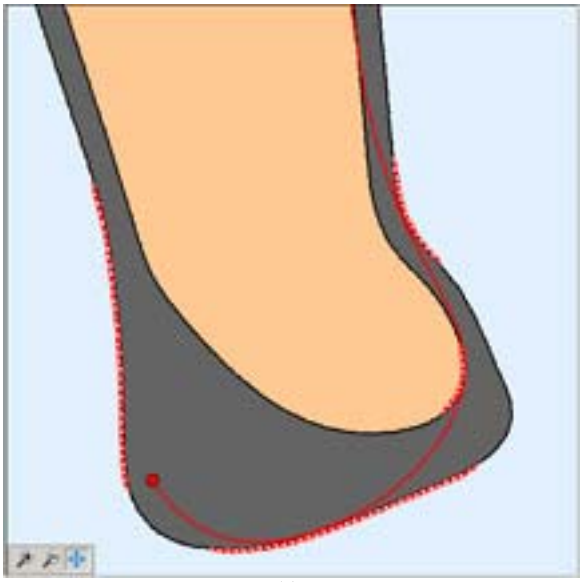
Figure 19 – Exact Track Map, Close Up

To create an Exact Track map make sure that you have a **differential GPS lock**. You can check to see if you have a differential lock looking at the indicator field in the top left hand corner of the screen and looking for the 'D' to be on. If you see the 'D' you are locked in, if not give it some more time. A differential lock will ensure that you get the most accurate track map. *Before* you go out onto the track, like while in the hot pits, press anywhere on the screen to bring up the navigation buttons. Touch the Main Menu button, touch the Timing button, touch the Track Mapping button, the touch the Exit button (Fig 20). A track mapping screen will appear prompting you to press 'Start' (Fig 21). Once you are in the track mapping screen, drive out onto the track and place your tires as close to the edge of the track as you can (you choose which side you want to drive first). When you are ready, press the 'Start' button; a screen will appear that displays the distance traveled and the distance to the start (Fig 22). Drive the left side of the track. Drive past your initial staring point and then cross over to the right side of the track. Again place your tires as close to the edge of the track as possible and drive the right side of the track. Drive past your initial starting point and press the 'Stop & Save' button and the Exact Track Map is saved. The car must travel in the same direction for each lap. If for any reason you want to abort the track mapping press the 'Cancel' button.

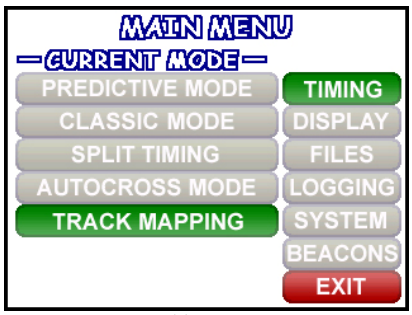

Figure 20 - GPS Track Mapping Screen

MAPPING
Place tires on the edge of the track and begin recording. Complete one lap, then place the tires on the opposite edge of the track. Complete one more lap and stop recording. Travel no faster than 30mph.
START RECORDING TRACK MAP
11 52m L:00 S:00:00
Figure 21 - GPS Track Mapping Screen

Figure 22 - GPS Track Mapping Screen

You want to drive around the track as slow as you can. If you have the 5 Hz GPS you want to stay around 20-25 mph (32-40 kph) and with the 10 Hz GPS around 25-30 mph (40-48 kph). The slower that you drive the closer together the GPS samples are, this creates a more accurate and smooth track map. The track map will be one of the log files. Send the log file (.bin) to RLC Racing and they will create the Exact Track map so that you can use it in the PC software. Make sure you include what track it is, the configuration (if there are alternates), website to the track, and any additional information that may be helpful. RLC Racing will use this information and Google Earth to add rumble strips, buildings, flag stations, bleachers, and any other track characteristics we can see. We will send you the Exact Track map file (.map) and now you can analyze your data within the confines of the actual widths of the track.

GPS Lap Timer

GPS is used to measure lap times instead of a stationary beacon you have to place on the track. GPS is more exact and it eliminates the need of buying an expensive lap timer. The GPS lap timer is automatically set up once you set the start/finish line, which was covered in an above section. Now your lap time will pop up on your unit every time your car crosses the start/finish line (Fig 23). Also displayed is the difference between you current lap time and your fastest lap time. If your lap time is faster then it will be (-) in red and if the lap time is slower then it will be (+) in green.

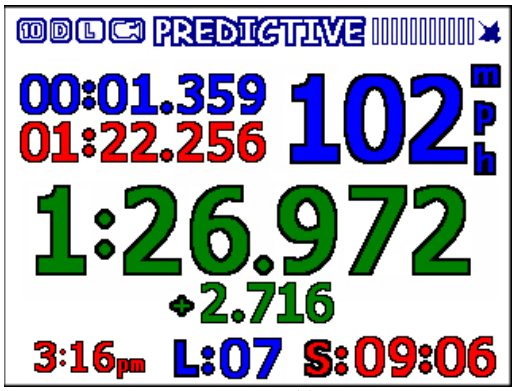

Figure 23 – Lap Timer

GPS Predictive Lap Timer

Predictive lap timing is a great tool when you want to try new things on the track and need some instant feedback. When the race logger is in predictive mode, it will inform you of the time difference at that current location on the track between your current lap and your fastest lap (ever), so you know if things are helping or hurting (Fig 24). If you are currently faster than your fastest lap then the time difference will be (-) in red and if you are currently slower then it will be in (+) green. The GPS predictive lap timer is automatically set up once you set the start/finish line, which was covered in an above section.

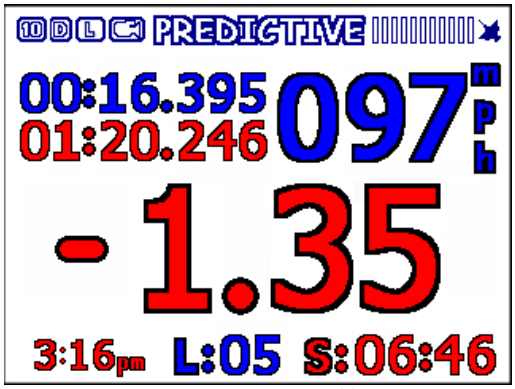

Figure 24 – Predictive Lap Time

GPS Split Lap Timer

The split lap timing feature on the RLC race loggers lets you divide up the track to work on specific sections to get your lap times down. By setting markers, you can section off the parts of the track you want to work on. You can set to two split markers on the track. When the unit is in split mode it will display the time it took to get through the same markers you set and the difference between your current time and your best time (Fig 25). If you were faster than your fastest time then the time difference will be (-) in red and if you are currently slower then it will be in (+) green.

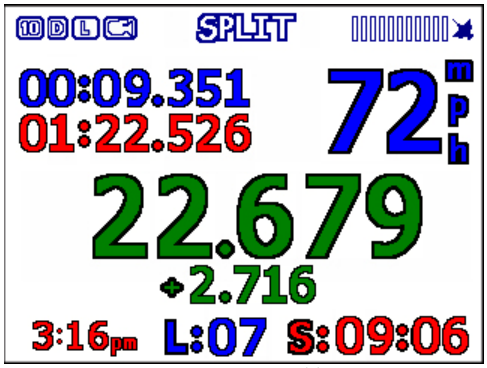

Figure 25 – Split Lap Time

Figure 26 – Split Setup Screen

To set the split lap timer, navigate to the Timing screen (Fig 10). Touch the Split button then press the Exit button. Another screen will appear (Fig 26) that will allow you to set a split beacon. Press the 'Set' button once before and once after the section of track that you want to work on. Now every time you cross the marker the time will start and it will stop when you cross the next marker. Your time will flash up on the screen along with the time difference between your current run and your fastest run.

GPS Autocross Timer

The Autocross mode on the Chase Commander lets you start timing without having to set a start line. The Chase Commander does not require a start line to be set because it starts logging/timing using the internal G-forces (when your car accelerates it starts timing). G-Force limits can be set in the Logging screen (Fig 13). Your first time through the course you will have to set a finish line. Every time you line up to take another turn you will need to press on the screen where the time is to reset the unit. Once the unit has been reset to zero, the Chase Commander is ready for another run.

To place the Chase Commander in Autocross mode, navigate to the main menu. Touch thee 'Autocross Mode' button in the Timing screen. When you exit from the main menu you will see a screen prompting you to set a finish line (Fig 27). Press the Set New Finish Line button when you cross the finish line.

Figure 27 – Autocross Mode

Now when you accelerate the timer will start and it will stop when you cross the finish marker. Your time will flash up on the screen along with the time difference between your current run and your fastest run. The fastest time will reset every time your unit is powered off.

GPS Performance/Drag Mode

The Chase Commander can easily be switched over to Performance/Drag Mode. The Performance Mode allows you to measure your car's horsepower, acceleration (0-60 or 0-100 mph), deceleration (60-0 or 100-0 mph), ¼ and 1/8 mile times, and max G's.

To place the Chase Commander in Performance mode touch on the screen, you will see two buttons drop down from the top of the screen (Fig 28). Touch on the 'Performance' button and the Drag Mode screen will appear (Fig 29).

Figure 28 – Navigation Buttons

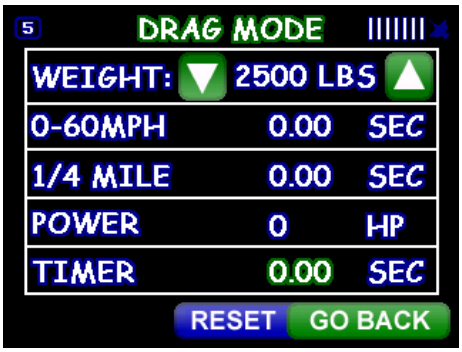

Figure 29 – Performance Mode

Figure 30 – Performance Mode 2

Enter in the weight of your car and select which performance measurements you want to see. Simply touch on the screen in the different areas to change the measurements. Above is another screen shot of more performance measurements (Fig 30). These performance measurements can be selected on the fly (while the car is moving). All performance measurements will start off of G-Forces which can be set in the logging screen (Fig 13). Once you are done with your run you will need to click on the 'Reset' button to reset all measurements. For deceleration measurements a 'Ready' indicator will appear in the bottom left hand corner when you have reached the appropriate speed.

When you are done with performance measurements you can go back to the timing screens by touching on the 'Go Back' button when the car has come to a complete stop.

Stop Logging / Summary Screen

Stop Logging

When you are done with your track session and your car has come to a stop, the Stop Logging button will appear on the bottom of the screen (Fig 31). You can either press it to stop logging or let the unit stop logging on its own (you set the time in the Logging screen). **It is important for the unit to stop logging *before* power is removed!** If you remove power before the unit has stopped logging then you could lose lap information or your log file could possibly become corrupted and you will not be able to play it on the Race Analyzer Software. This is why we recommend direct wiring to your battery. The next time you power the unit on the fastest lap from the previous session is displayed in the Driving screen and the entire summary of the previous track session can also be viewed in the Summary screen.

Figure 31 – Stop Logging Button

Summary Screen

When the unit has stopped logging, the Main Menu/Summary button will appear at the bottom right corner of the screen. Once you have stopped logging, you can view the Summary Screen (Fig 32) and see a summary of your track session. You can sort your data by lap or by time by pressing LAP or TIME. Press the up or down arrow buttons to scroll up or down through your lap times. When you are done you can either press the Timing button to go back to the Driving screen or press the Main Menu button to see the Main Menu screen.

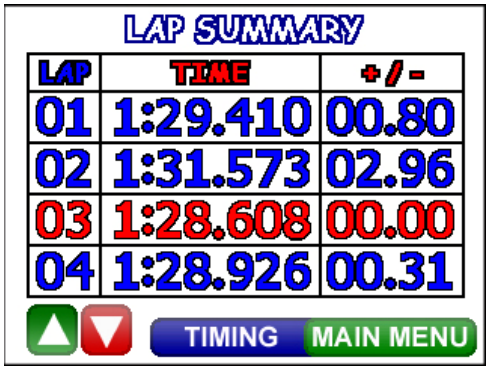

Figure 32 – Summary Screen

Race Log Files

Each time you go out on the track the Chase Commander creates a logged file session. These logged sessions can downloaded to your PC to analyze the data with the RLC Race Analysis software with the USB stick provided with your unit. To transfer the logged session files from your Chase Commander to a PC you only need to connect a USB memory stick, there are no extra cables to attach just the USB stick. Make sure the car is not running before you upload, copy, or delete files from the Chase Commander. Each time you offload a log file it makes a copy and stores it in a backup folder on the Chase Commander for future use.

Uploading Race Log Files

To transfer a logged session from the Chase Commander to a PC you will need the USB memory stick that was included with your Chase Commander but also available at your local office store. Insert the USB memory stick into the USB connector coming out the side of the unit. The Chase Commander will recognize the USB stick and if there are log files to upload then it will switch over to the Files screen (Fig 33). The Files screen will show you how many log files there are to upload. Touch the Transfer to USB button to upload the log files. With the logged sessions now on your USB stick, you can load them into the RLC Race Analyzer software and study your data. Every time you offload a log file from the Chase Commander it will automatically create a backup file. This backup file is stored in a backup file directory on the Chase Commander for future use. Please see the section below on how to copy and offload a backup file form the Chase Commander.

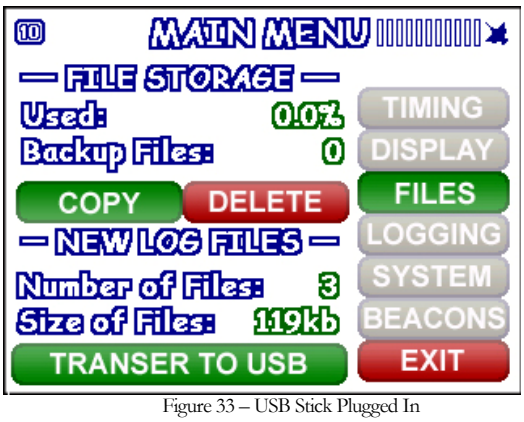

Figure 33 – USB Stick Plugged In

Copying Backup Log Files

To offload the backup files navigate to the Files screen. Simply plug in the USB stick that was provided with the Chase Commander and touch the 'Copy' button under the File Storage section on the screen (Fig 33). Your backup log files will start to copy onto your USB stick. With the logged sessions now on your USB stick, you can load them into the RLC Race Analyzer software and study your data. You can also choose to delete the backup files from your Chase Commander by clicking the 'Delete' button.

Synchronized Video

RLC worked closely with ChaseCam to produce the only truly synchronized video. By connecting a ChaseCam PDR to a Chase Commander the data is actually embedded in the video file to create just one file. By embedding the data in the video file we ensure that the data being taken by the Chase Commander (speed, track position, lap times, etc.) is in fact directly linked to the video being taken by the camera. Now when you play your synchronized video log file on the PC Race Analysis Software your video, data, and track position are exactly linked. You can click any place on the track and your video and data will all jump to that exact position. Knowing that your data and video are truly synchronized you can analyze your data in more depth than ever before. You can see the exact position you applied the brakes, when you dove into a turn, and when got back on the throttle. Compare this to your fastest lap and you will improve your lap times in no time at all.

ChaseCam PDR Camera

The ChaseCam PDR needs to have its own source of power; again we recommend that you wire directly to the battery, and needs to share the same ground as the Chase Commander.

Firmware

The ChaseCam PDR needs to have the latest firmware, version 01.02.12 or higher, installed so that it will properly communicate with the Chase Commander. If you ordered your ChaseCam camera recently from RLC or directly from ChaseCam it will already have the latest firmware installed. If you ordered from a dealer or it is an existing camera you may want to check the current version on your camera. To check the version number on your ChaseCam PDR, look at the screen while the camera is booting (Fig 34).

Figure 34 – ChaseCam PDR Loading Screen

If your firmware is an older version then you will need to download the latest firmware from the ChaseCam website, www.chasecam.com/pdr.update, and install it.

Settings on the ChaseCam PDR Camera

With up-to-date firmware installed on your unit you can now load the pre-defined shortcut option that allows the ChaseCam PDR to work exclusively with the Chase Commander. To load this pre-defined option press the Menu button on the ChaseCam PDR, select the Shortcuts option, select the Data Acquisition option, then select Data Acq 5 – Chase RLC (Fig 35).

Figure 35 – ChaseCam PDR Shortcut

The pre-defined shortcut option needs to be loaded so that ChaseCam PDR is set up properly to work with the Chase Commander. There are no settings that need to be set on the Chase Commander.

Connecting To The ChaseCam PDR

Both the Chase Commander are set up for synchronized video. There is a cable on the harness that is labeled 'Video' that plugs directly into the back of the ChaseCam PDR (Fig 36). When plugging in cables, make sure the car is turned off and there is no power to the ChaseCam PDR or Chase Commander.

Figure 36 – Chase Commander Connected to ChaseCam PDR

With the Chase Commander plugged into the ChaseCam PDR the RLC unit will completely control the camera; it starts recording when the Chase Commander starts logging and stops recording when it stops logging. There are no special settings that you need to do on the Chase Commander, it will automatically connect and control the ChaseCam camera.

Verify Connection

When you successfully set the ChaseCam PDR up and have connected it to the Chase Commander it is time to verify the connection. Start your engine and look at the screen of the Chase Commander. When the Chase Commander recognizes that you are connected to a ChaseCam camera you will see a camera icon in the top left of the driving screen in the indicator field (Fig 37).

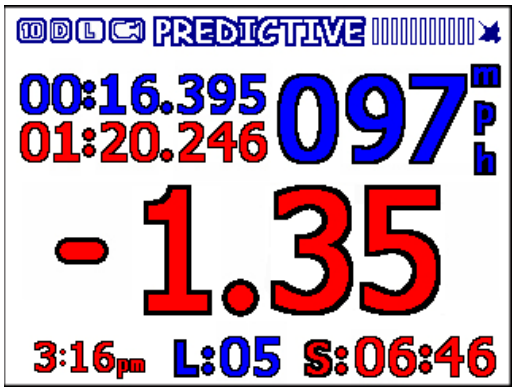

Figure 37 – GLC Indicator

Also look at the ChaseCam PDR. When it is ready to start recording the light on the front will be solid green (Fig 38).

Figure 38 – ChaseCam PDR Light Green

Verify ChaseCam PDR Recording

When you have successfully verified that your ChaseCam PDR is connected to your Chase Commander you need to verify that it is recording properly. The Chase Commander will completely control the ChaseCam PDR; it will tell the camera to start recording when the RLC unit starts logging and tell it to stop recording when the RLC unit stops logging. When the L appears in the indicator field in the top left hand corner of the screen, the RLC unit is logging data (Fig 37). Check the light on the front of the ChaseCam PDR, it should be flashing red to indicate that it is recording (Fig 39).

Figure 39 – ChaseCam PDR Light Red

Removing Power

When you have finished your session and are ready to turn your engine off or remove power you **must wait for Chase Commander to stop logging first!** The L in the indicator field will turn off when the Chase Commander has finished logging (you set your logging preferences in a section above). Once the Chase Commander has stopped logging it will tell the ChaseCam PDR to stop recording, again the light on the front will turn to solid green. If you do not let your Chase Commander stop logging before power is removed, you will corrupt your synchronized video file and you will not be able to use it in the RLC Race Analysis Software.

Downloading Synchronized Video Log File

When you are ready to download the synchronized video log file so you can analyze your data in the PC Race Analysis software, you do so from the compact flash card in the ChaseCam PDR recorder. It is a .mpg file that you can play as a regular video file in a Windows Media Player but if opened in the PC Race Analysis Software it will contain both the video and the data. You do not have to download the log file from the Chase Commander if you don't want to because the data is already contained in the video file. It is the .mpg file from the compact flash card in the ChaseCam PDR camera that you want to open in the PC software so you have synchronized video file.

Corrupt Synchronized Video File?

If you find that your camera turned off accidentally while out on the track or you removed power too soon, your synchronized video file will be corrupt. You cannot open it in the Race Analysis Software but you can still view it as a standard video file.

The log file on the Chase Commander can always be used for data analysis, even if the synchronized video file is corrupted. The data (.bin) log file on the Chase Commander only contains the data, not the video. Use the USB memory stick included with the Chase Commander to offload the log file.

Updating the Chase Commander

Updating the Chase Commander is very easy to do. R.L.C. will post all new versions of the firmware at our website under Downloads. These same steps are also posted at the website.

To update the Chase Commander first download the latest version of firmware onto your computer. Put the file on a USB memory stick, we included on in your kit for convenience. Power off your Chase Commander and plug the USB connectors on the harness together.

Power the unit on. It will come up in Update Mode (Fig 40). (*Note: If it comes up into the driving screen, power the unit off and on again.)

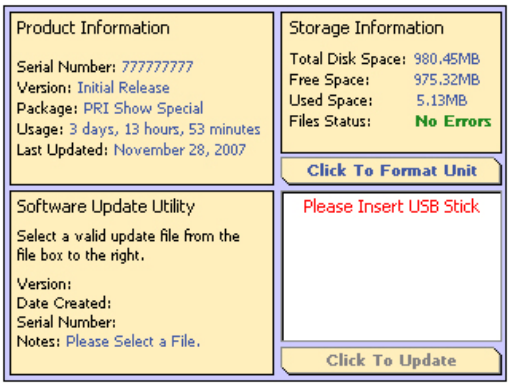

Figure 40 – Update Mode

Once in Update Mode, unplug the USB connectors from each other and insert your USB stick. Choose the downloaded file from the file box in the lower right. Once selected, press the 'Click To Update' button. A window will pop up asking you if you want to update, press the 'Continue' button. Once the update has started, leave the unit alone until the update is complete.

When the Chase Commander is done updating press the 'Return to Menu' button. Press the 'Click To Format Unit' button to format your SD Card. *Note: This will reset the unit to factory default settings and erase all log files on the unit, so you may want to copy log files off before updating your unit. Once the format is complete, power off your unit, and power back on normally. If the unit does not come up into the standard software, power off and on once again. You are now updated.